

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Please cancel claims 1-15 without prejudice.

1-15. Canceled

16. (Newly Presented) A voltage regulator for use with switching power converters comprising

a non-linear detection circuit having a reference voltage connected to a first input, and a signal representative of an output voltage connected to a second input, and outputting a first logic signal if the first input is greater than the second input, and a second logic signal if the second input is greater than the first input,

a charge pump responsive to the output of the detection circuit,

a filter connected to an output of the charge pump for linearizing the non-linear response of the detection circuit, and adapted to provide an output signal to a controller comprising at least one of a PWM or a PFM controller to cause the voltage applied to a load to be substantially constant, and

wherein the first input to the detection circuit is adapted to be connected to the load through only an impedance.

17. (Newly Presented) A voltage regulator for use with switching power converters comprising

a comparator having a reference voltage connected to a first input, and a signal representative of an output voltage connected to a second input, and outputting a first logic signal if the first input is greater than the second input, and a second logic signal if the second input is greater than the first input, and

a filter continuously having an input responsive to an output of the conversion circuit for preventing oscillation and smoothing the signal at the input to the filter, the output of the filter adapted to be connected to a controller circuit, wherein the controller is at least one of a group comprising a PFM controller and a PWM controller.

18. (Newly presented) A voltage regulator for use with switching power converters comprising

a non-linear detection circuit comprising a voltage comparator having a reference voltage connected to a first input, and a signal representative of an output voltage connected to a second input, and outputting a first logic signal if the first input is greater than the second input, and a second logic signal if the second input is greater than the first input,

a conversion circuit comprising a charge pump for continuously converting the output of the detection circuit to charge, and

a filter connected to an output of the conversion circuit for linearizing an output of the conversion circuit and adapted to provide a smoothed signal to a driver circuit.

19. (Newly presented) The voltage regulator of claim 16 wherein the voltage applied to a load is less than the reference voltage.

20. (Newly presented) The voltage regulator of claim 17 wherein the voltage applied to a load is less than the reference voltage.

21. (Newly presented) The voltage regulator of claim 18 wherein the voltage applied to a load is greater than a supply voltage.

22. (Newly presented) The voltage regulator of claim 16 wherein the detection circuit, charge pump and filter cooperate to reduce output ripple.

23. (Newly presented) A method for reducing ripple in a DC-to-DC conversion circuit comprising the steps of

outputting as an output signal a first logic signal if a reference signal is greater than an output voltage,

outputting as an output signal a second signal if the reference signal is less than the output voltage,

continuously converting the output signal to charge as a charge output,

filtering the charge output to linearize the output signal to cause the output voltage applied to a load to be substantially constant, and

providing the linearized output to a controller and drivers for application to the load.